



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
PO Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,642	06/22/2001	J. Scott Buchanan	2001B052	7135

23455 7590 05/23/2003

EXXONMOBIL CHEMICAL COMPANY  
P O BOX 2149  
BAYTOWN, TX 77522-2149

[REDACTED] EXAMINER

STOCKTON, LAURA

ART UNIT	PAPER NUMBER
1626	13

DATE MAILED: 05/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILED DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
--------------------	------------	-----------------------	------------------

**EXAMINER**

ART UNIT	PAPER NUMBER
----------	--------------

13

**DATE MAILED:**

This is a communication from the examiner in charge of your application.  
**COMMISSIONER OF PATENTS AND TRADEMARKS**

## OFFICE ACTION SUMMARY

Responsive to communication(s) filed on March 11, 2003

This action is FINAL.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 D.C. 11; 453 O.G. 213.**

### **Disposition of Claims**

Claim(s) 1-13 is/are pending in the application.  
Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 Claim(s) \_\_\_\_\_ is/are allowed.  
 Claim(s) 1-13 is/are rejected.  
 Claim(s) \_\_\_\_\_ is/are objected to.  
 Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All  Some\*  None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) \_\_\_\_\_

received in this national stage application from the International Bureau (PCT Rule 17.2(a))

**\*Certified copies not received:**

Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- Notice of Reference Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- Interview Summary, PTO-413
- Notice of Draftperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

-SEE OFFICE ACTION ON THE FOLLOWING PAGES-

09/887,642

## DETAILED ACTION

Claims 1-13 are pending in the application.

Rejections made in the previous Office Action that do not appear below have been withdrawn. Therefore, arguments pertaining to these rejections will not be addressed.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buysch et al. {U.S. Pat. 4,434,105} and Chem Systems “Developments in Dimethyl Carbonate Production Technologies” 99/00S6, May 2000, each taken alone or in combination with each other.

*Determination of the scope and content of the prior art (MPEP §2141.01)*

Applicants claim a process of making dialkyl carbonate and a diol (e.g., ethylene glycol) from alkylene oxide (e.g., ethylene oxide), carbon dioxide and an aliphatic monohydric alcohol (e.g., methanol and ethanol) comprising (a) reacting an alkylene oxide with carbon dioxide in the presence of a homogeneous carbonation catalyst (e.g., quaternary ammonium halides and alkali halides) to provide a crude cyclic carbonate and (b) reacting said cyclic carbonate with an aliphatic monohydric alcohol in the presence of said homogeneous carbonation catalyst.

Buyssch et al. '105 teach a process of making dialkyl carbonate (e.g. dimethyl carbonate) and a diol (e.g., glycol) by reacting alkylene oxides (e.g., ethylene oxide) with aliphatic and/or cycloaliphatic alcohols (e.g., methanol) and carbon dioxide in the presence of catalysts, such as sodium iodide, thallium carbonate, tetraethylammonium bromide or mixtures thereof (column 1, lines 45-68; column 2, lines 34-38, lines 60-68; column 3, lines 1-23; and Examples 1, 11 and 12).

Chem Systems 99/00S6 (May 2000) {pages 26-31} teach a process of making dialkyl carbonate (e.g., dimethyl carbonate) and a diol (e.g., ethylene glycol) from alkylene oxide (e.g., ethylene oxide), carbon dioxide and an aliphatic monohydric alcohol (e.g., methanol) comprising (a) reacting an alkylene oxide with carbon dioxide in the presence of a homogeneous carbonation catalyst (e.g., tetraethylammonium bromide and potassium iodide) to provide a crude cyclic carbonate and (b) reacting said cyclic carbonate with an aliphatic monohydric alcohol (e.g., methanol) in the presence of said homogeneous carbonation catalyst, such as a quaternary ammonium halides and alkali halides.

*Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)*

The difference between the process of Buysch et al. '105 and the process instantly claimed is that Buysch et al. '105 teach the addition of all ingredients at once instead of sequentially as instantly claimed.

The difference between the process of Chem Systems 99/00S6 (May 2000) and the process instantly claimed is that of overlapping pressure ranges.

*Finding of prima facie obviousness--rational and motivation (MPEP §2142-2413)*

The addition of ingredients sequentially, as instantly claimed, instead of simultaneously, as taught in Buysch et al. '105, is *prima facie* obvious because one skilled in the art would expect to obtain a dialkyl carbonate and a diol.

In regard to the Chem Systems 99/00S6 (May 2000) reference, the optimization of variables, such as pressure ranges, temperature ranges and molar ratios, in a known process is *prima facie* obvious. The rationale is discussed in In re Boesch, 205 USPQ 215 (1980).

One skilled in the art would have been motivated to utilize the processes taught by the above prior art to arrive at the instant claimed process with the expectation of obtaining a dialkyl carbonate and a diol.

Since each of the above cited references teach similar processes, the combination of these references would also teach Applicants' claimed invention. The instant claimed process would have been suggested to one skilled in the art and therefore, the instant claimed process would have been obvious to one skilled in the art.

*Response to Arguments*

Applicants' arguments filed March 11, 2003 have been fully considered. Applicants argue that Buysch et al. disclose a thallium catalyzed process and do not teach or suggest that the process can be carried out without the use of a thallium catalyst. Applicants argue that Buysch et al. disclose that the first step reaction is conducted in the presence of a bifunctional halide/Lewis acid catalyst at pressures below 10 bar and the second reaction is conducted in the presence of the same bifunctional halide/Lewis acid catalyst.

In response, Buysch et al. teach that the catalyst used in the reaction are, for example, halides and halides of quaternary ammonium

bases (column 2, lines 59-63). Buysch et al. teach that thallium compounds are a preferred embodiment. However, it is well established that consideration of a reference is not limited to the preferred embodiments or working examples, but extends to the entire disclosure for what it fairly teaches, when viewed in light of the admitted knowledge in the art, to person of ordinary skill in the art. *In re Boe*, 148 USPQ 507, 510. Additionally, Buysch et al. do run the process without a thallium compound. See Example 8 in column 4. Further, the independent claim 1 contains the language “comprising”, which is open language, and therefore, the claims embrace reagents/reactants other than those specifically mentioned in the claims.

Applicants argue that Chem Systems has only general descriptions of several processes. Applicants argue that the first process step is carried out in the presence of a carbonation catalyst but the second reaction is carried out in the presence of a trans-esterification catalyst.

In response, Chem Systems teach that both the first process step and the second reaction step is carried out in the presence of a

carbonation catalyst (see page 26, tetraethylammonium bromide and potassium iodide; and page 31, salts of zirconium, titanium, etc). For all the reasons given above, the instant claimed process is obvious to one skilled in the art.

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

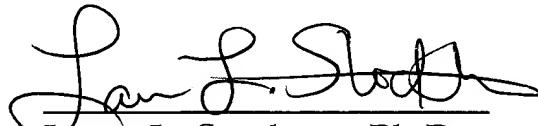
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the

statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura L. Stockton whose telephone number is (703) 308-1875. The examiner can normally be reached on Monday-Friday from 6:00 am to 2:30 pm. If the examiner is out of the Office, the examiner's supervisor, Joseph McKane, can be reached on (703) 308-4537.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4556.



Laura L. Stockton, Ph.D.  
Patent Examiner  
Art Unit 1626, Group 1620  
Technology Center 1600

May 20, 2003